Note on Use of NASA Radar Altimeter Data from the First 8 Data Cycles

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Investigators should use the NASA radar altimeter (ALT) data products for the first 8 data cycles only with great care. There are number of reasons for this. These early cycles had numerous switches between ALT and SSALT, several spacecraft (S/C) safeholds, and a series of attitude calibration maneuvers. The amount of ALT data available for these early cycles varies, but all of the cycles 1 - 8 have significantly less data than the normal later cycles. There were a number of operations related to the S/C that had not yet been fully stabilized; foremost among these was the control of the S/C attitude. There are a number of data effects from the S/C attitude such as altimeter instrument correction, S/C center of gravity (c.g.) range correction, and orbit related c.g. corrections.

The S/C attitude control system had the last major adjustment and correction early in cycle 9, and before that adjustment the off-nadir angle would exceeded 0.3 degrees. We believe the ALT instrument corrections for attitude should be good out to about 0.3 degrees, but may be unreliable beyond that angle.

We have carefully examined the TOPEX ALT performance during these cycles. During "normal operations" times (specifically, when the off-nadir angle was 0.3 degrees or less) we have found no difference from the later cycles in the altimeter performance. We do fully believe that the first 8 cycles should not be used unquestioningly and, if used at all, should be selectively used only with care. For those wishing to use the ALT data selectively from the first 8 cycles, we provide below a table of times for which we believe the data would be normal and acceptable.

TOPEX Time Ranges, First 8 Data Cycles, For Possibly Valid Range Data. Other Data Should Be Excluded.

Cycle	Start Date, Time	Stop Date, Time	# secs after edit	Data %, after edit	Waveform-est. attitude, deg.	Reason for stop/comments
1	1992day270, 00:00:00	1992day275, 16:23:35	84,886	20%	0.25 - 0.3	SSALT on/ This is good ALT data, but the corrections are not; attitude generally above 0.3. The S/C was switched to geoid ref 275t205500 and bias entered at 223000. Data not useful?
2	1992day277, 01:36:36	1992day286, 22:45:35	292,188	68%	0.25 - 0.3	ALT to idle, new parameter set loaded. ALT data good, but corrections probably bad. Attitude about 0.3. Also check the c.g. correction
3	1992day287, 01:30:00	1992day287, 22:30:00	290,274	68%	0.1 - 0.2	Attitude Bias changed 287t223000. Moved att from above 0.3 to near 0.2. Before this good ALT data, but corrections may not be.
	1992day287, 23:00:00	1992day295, 12:00:00				ALT to idle
4	1992day298, 20:00:00	1992day306, 19:32:15	327,402	76%	0.08 - 0.2	End cycle 4/new parameter set loaded 304t195000. Att swings
5	1992day306, 19:32:16	1992day315, 07:55:00	341,053	79%	0.1 - 0.3	ALT to idle/ attitude swings above 0.3.
6	1992day316, 17:30:42	1992day317, 09:30:00	309,279	72%	0.1	ALT to idle/ att swings /attitude bias change
	1992day318, 20:46:00	1992day324, 01:44:00				Att test/att is more stable; first real good data
	1992day324, 05:24:00	1992day325, 06:30:00				SSALT on/avg att is 0.1
7	1992day326, 15:29:14	1992day336, 13:27:45	350,459	82%	0.1 - 0.3	End cycle/Att swings to above 0.3 (attitude bias #s were wrong). memory patch 328t191300-202700
8	1992day336, 13:27:45	1992day345, 01:49:00	270,970	63%	0.05 - 0.3	SSALTon/ Att swings to above 0.3
9	1992day348, 15:00:00	cycle end	302,463	70%	0.08	Att stable at 0.05 to 0.1. Good data from here.
10	cycle start	cycle end	417,966	97%	0.05	Att stable 0.03 to 0.08. All subsequent TOPEX data are good, in cycles 10 and onwards.